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Emission allowances in the accounting of industrial companies according to Slovak legislation versus IAS/IFRS

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Abstract
One of the global problems facing the world today is climate change, which requires cooperation with other countries. The 1980s marked a turning point in addressing climate issues, as individual governments began to recognise the necessity of cooperation. All countries contribute to greenhouse gas emissions to varying degrees, and no single country can solve these problems on its own. The United Nations Framework Convention on Climate Change (UNFCCC) also addresses this global issue, with the main goal of reducing national greenhouse gas emissions by a certain percentage. Greenhouse gases produced by human activity include carbon dioxide (CO_2), which is released primarily during the combustion of fossil fuels. The concept of greenhouse gas trading is based on the principles set out in the UNFCCC. In this paper, we will address the issue of greenhouse gas emissions and their representation in the accounting of industrial companies, with an impact on profit or loss. The aim of the paper is to compare the accounting treatment of emission allowances under Slovak legislation with that under International Financial Reporting Standards (IFRS), with an emphasis on their impact on profit or loss. The paper further includes proposals for industrial manufacturing enterprises in the analysed area. The issue of emission allowances is currently highly relevant for society from an environmental point of view and is also important for industrial companies in terms of accounting presentation.

Keywords
emissions, emission allowances, European Emissions Trading System, accounting for emission allowances, IAS/IFRS

Introduction

Greenhouse gas emissions arise from human activities and natural processes. Emissions refer to the direct or indirect release of substances, heat, noise and even vibrations into water, soil, or the atmosphere from a specific source. This paper focuses on greenhouse gas emissions resulting from human activity, which impact not only the environment, but also the financial performance of industrial enterprises. These emissions result from the release of enormous quantities of greenhouse gases into the atmosphere, thereby increasing their concentration. This process leads to global warming and amplifies the greenhouse effect. The main anthropogenic sources of greenhouse gas emissions include:

- the combustion of fossil fuels in industry, electricity generation, transportation, and households,
- waste landfills,
- the use of industrial gases containing fluorine,
- agricultural activities, which are often associated with changes in land use – such as deforestation.

The amount of emissions that can be released over a specific, predetermined period is expressed by an emission allowance (quota). Emission allowances are determined to regulate the volume of pollutants released, in line with international air protection measures. An emission allowance is expressed in tonnes; however, in the case of greenhouse gases, it is measured in tonnes of carbon dioxide equivalent (CO_2 eq.). The quantity of emissions in specific indicators is defined by the emission limit. The emission limit sets the maximum permissible level of emitted pollutants that must not be exceeded over a specified period (Enviroportal, 2025).

The most significant international agreement to reduce greenhouse gas emissions is the Kyoto Protocol, which supplements the United Nations Framework Convention on Climate Change (UNFCCC). Under the Kyoto Protocol, 15 member states of the European Union committed to reducing their greenhouse gas emissions by 8 % between 2008 and 2012 (compared to 1990 levels). The European Union approved the Kyoto Protocol on May 31, 2002; however, it did not enter into force until Russia ratified it on February 16, 2005. The United States of America, as the largest emitter of greenhouse gases, has not ratified the Kyoto Protocol to this day. (UNFCCC, 2025).

To achieve the long-term goals of the Kyoto Protocol, conditions relating to emission reductions have been proposed:

- the introduction or strengthening of policies within individual countries relating to emission reductions (development of renewable energy sources, increasing energy efficiency, promoting sustainable forms of agriculture),
- cooperation with other contracting parties (exchange of information, coordination of individual countries' policies).

Among other things, the Kyoto Protocol also includes flexible mechanisms, specifically:

- joint fulfilment of commitments,
- clean development mechanism,
- trading in emission savings. (Enviroportal, 2025)

The European Union Emissions Trading System (EU ETS) is a key policy instrument of the European Union (EU) aimed at limiting greenhouse gas emissions, which are largely responsible for global warming and climate change. The system operates on the principle of setting a cap on the total amount of emissions allowed from high-emission industries. Within this cap, companies can buy and sell emission allowances as needed. If a company emits less than its allowance, it can sell the surplus permits to others who have exceeded their limits. This trading mechanism is known as “cap-and-trade”. (EC.EUROPA.EU, 2025).

The EU ETS is a key pillar of the European Union’s climate policy, aiming to reduce greenhouse gas emissions cost-effectively and efficiently. The original legal framework has undergone several revisions in response to the system’s development. The most recent amendments were adopted in Directive (EU) 2023/958 and Directive (EU) 2023/959 as part of the EU’s "Fit for 55" initiative. This initiative seeks to align EU policies with the climate objectives and commitments set out in the European Climate Law, under the European Green Deal, and the Paris Agreement.

The EU ETS has emerged as one of the most popular and effective approaches to curb GHG emissions and facilitate the transition to a low-carbon economy. ETS promotes cleaner manufacturing and allows firms to reduce emissions at a cost-effective rate (Al et al. 2021, Hasan et al. 2021). The EU ETS began in the European Union in 2005 and covered a wide range of sectors noted for emitting large amounts of GHGs, including energy

production and energy-intensive sectors such as cement and glass production. ETS in the EU covers about 11,000 firms' emissions (Basse Mama and Mandaroux, 2022; Joltreau and Sommerfeld, 2019).

The European Union has established the concept of the emissions trading system on six basic principles:

- is based on the principle of cap and trade,
- is focuses on CO_2 emissions produced by the largest industrial polluters,
- implementation takes place at specific intervals with regular checks, which create opportunities to extend the scheme to other sectors of the economy and other greenhouse gases,
- decisions on emission allowance allocation plans are also made repeatedly at specific intervals,
- includes a huge compliance monitoring framework,
- the emissions market operates throughout the EU, but special mechanisms open up opportunities for emissions reductions in other countries as well, and it is open to cooperation with other similar systems.

From the early stages of the EU ETS (2005 to 2007), authorities granted GHG emission rights without charging a fee. During this period, information technology and other supervisory procedures were established to evaluate and provide an understanding of emissions from covered zones. However, from 2008 to 2012, the authorities established mandatory national targets to support the EU in achieving its Kyoto Protocol targets. Yet, during the same period, about 90% of the emissions rights were granted at no cost (Basse Mama and Mandaroux, 2022; Doda et al., 2021; Hájek et al., 2019).

The major advantage of applying carbon markets among various methods to reduce GHG emissions is that they accelerate the decline in emissions, are not expensive, and thus achieve the goals at a reduced financial and economic cost (Luo et al., 2021). ETS is commonly advanced in the structure of cap-and-trade systems: the ceiling (or cap) is set entirely on the policy dimension and typically declines over time. Scholars have argued that ETS below certain situations, the externalities or inadequacies of the economic system may be corrected through cooperation among parties; thus, attaining the maximisation of social advantages (Feng et al., 2021).

The EU ETS covers more than 11,000 power plants, manufacturing plants, and airline operators in the European Union. On average, 45% of total emissions in the European Union are covered by the EU ETS. This system is the largest intermediary in the market for emissions trading, accounting for more than three-quarters of the volume. The European Emissions Trading System is an effective tool in terms of the cost of reducing greenhouse gas emissions. (Europskaunia, 2025)

The Kyoto Protocol lists seven types of emission allowances and emission credits, with each emission allowance or emission credit representing one metric ton of CO_2 equivalent, calculated based on the impact of six gases.

Carbon emission credits, in fact, refer to the allowed carbon emission amounts, i.e., the quotas, allocated to entities within a specific period. To comply with the limit on total carbon emissions, entities can participate in the carbon emissions credit trading market to purchase additional quotas or sell their surplus (Long and Han, 2020).

Many existing references have discussed low-carbon economic dispatch of the energy system in the context of carbon emission credit trading markets. Yang et al. (2021) integrated the cost of carbon emission credits into the optimal operation model of energy systems and analysed the influence of carbon emission credit prices on the operation of the system Wang et al. (2020), He et al. (2020) built an energy scheduling model based on carbon emission credits, which are instructive for the cost analysis of carbon emission credit trading in energy systems. Xiang et al. (2021) proposed an optimal operation model for energy systems integrating multiple resources, such as gas turbines, photovoltaic power plants, and energy storage systems. This model integrates the cost of carbon emission credit trading into its objective to better reflect actual operating costs. Luo et al. (2021) optimised the energy structure by proposing a carbon-emission credit trading mechanism and studied the role of energy storage systems in low-carbon economic dispatch with the designed trading mechanism.

The Kyoto Protocol defines the following types of emission allowances and emission credits:

- European Unit Allowances (EUA) are carbon credits or emissions that can only be traded within the EU ETS, i.e., they are only tradable within the European Union. Each EUA represents one tonne of CO_2 that the holder has the right to emit.
- Assigned Amount Units (AAUs) are allowances created under the terms of Annex CMP.1 of the Kyoto Protocol, i.e. the Procedures for Accounting for Assigned Amount Units. These units can be traded within the international ITL log.;
- Removal Units (RMUs) are allowances that, like AAUs, are created under the terms of Annex CMP.1 of the Kyoto Protocol.
- Emission Reduction Units (ERUs) represent one metric ton of CO_2 equivalent. They are derived from transferred credits obtained from the Joint Implementation (JI) flexible mechanism, which was implemented in one of the countries included in Annex B of the Kyoto Protocol.

- Certified Emission Reduction (CER) credits are issued by the Executive Board of the Clean Development Mechanism (CDM), which is also one of the flexible mechanisms of the Kyoto Protocol. CER credits are issued for projects implemented in countries not included in Annex B of the Kyoto Protocol. These credits are derived from projects and are therefore considered the most complex units to achieve.
- Temporary Certified Emission Reduction (TCER) credits are issued by the Executive Board of the Clean Development Mechanism 19 (CDM). They are issued only for afforestation projects that must be implemented in countries not included in Annex B of the Kyoto Protocol. (EC.EUROPA.EU, 2016).

In principle, the simplest approach to carbon pricing would be for the government to impose a carbon tax (Metcalf, 2007). Implementing a carbon tax (or any other meaningful climate policy instrument) will increase the cost of energy consumption and could adversely affect the competitiveness of energy-intensive industries. This competitiveness effect can result in negative economic and environmental outcomes: firms may relocate facilities to countries without meaningful climate change policies, thereby increasing emissions in these new locations and offsetting some of the environmental benefits of the policy. Such "emission leakage" may actually be relatively modest, because a majority of the emissions in developed countries occur in nontraded sectors, such as electricity, transportation, and residential buildings. However, energy-intensive manufacturing industries that produce goods competing in international markets may face incentives to relocate and advocate for a variety of policies to mitigate these impacts (Aldy and Pizer, 2011).

In a similar fashion to a carbon tax, domestic cap-and-trade programs could include a border tax to mitigate some of the adverse competitiveness impacts of a unilateral domestic climate policy and encourage trade partners to adopt mitigation policies with comparable stringency. In the case of a cap-and-trade regime, the border adjustment would take the form of an import allowance requirement, so that imports would face the same regulatory costs as domestically produced goods. However, border measures under a carbon tax or cap-and-trade raise questions about the application of trade sanctions to encourage broader and more extensive emission mitigation actions globally, as well as their legality under the World Trade Organisation (Brainard and Sorking, 2009; Frankel, 2010).

Material and Methods

The core source of data was a set of valid legislative and methodological measures governing the accounting of emission allowances at both the national and international levels. Within the framework of Slovak legislation, we were based on Act No. 572/2004 Coll. on Emissions Trading, Act No. 431/2002 Coll. on Accounting, and Guideline No. 23054/2002-92 of the Ministry of Finance of the Slovak Republic on the procedure for accounting for and reporting emission allowances. These documents serve as the basis for addressing the accounting for emission allowances in accordance with Slovak accounting regulations.

In the context of accounting under international accounting standards (IAS/IFRS), we studied the interpretation of IFRIC 3 – Emission Allowances, which, although officially repealed, still provides relevant interpretative frameworks. In addition, we worked with IAS 20 – Accounting for Government Grants and Disclosure of Government Assistance, as well as IAS 38 – Intangible Assets, both of which relate to the valuation and reporting of emission allowances.

For empirical comparison, we used available statistical and allocation data on the volume of emissions allowances in Slovakia. We paid particular attention to the sectoral breakdown of emissions and the share of industrial production in Slovakia's total emissions. We obtained this data mainly from the Emissions and Biofuels Department of the Slovak Hydrometeorological Institute (SHMÚ). This department is responsible for managing the national inventory system, coordinating data collection, and processing and submitting annual greenhouse gas emissions balances in accordance with the requirements of the United Nations Framework Convention on Climate Change (UNFCCC).

Based on data from the Slovak Hydrometeorological Institute, we have compiled a graph showing the development of total greenhouse gas emissions in the Slovak Republic from 1990 to 2023. This development is shown in detail in Fig. 1, which documents a significant long-term reduction in emissions. Graph 1 shows that the highest emissions in Slovakia were recorded in 1990, which is also the reference year for most climate policies, with emissions reaching 73,425 Gg CO_2 eq. In the following years, there was a noticeable decline in emissions, mainly as a result of economic transformation, a decline in industrial production, and the gradual introduction of environmental measures.

Conversely, the lowest emission values were recorded in 2023, when emissions reached only 36,073 Gg CO_2 eq., representing a decrease of more than 50% compared to 1990. This development confirms the systematic reduction of emissions in Slovakia in line with European Union targets and international climate commitments. This trend supports the thesis that the Slovak Republic's participation in the EU ETS and the implementation of national and European environmental policies have contributed to a significant reduction in greenhouse gases in the country.

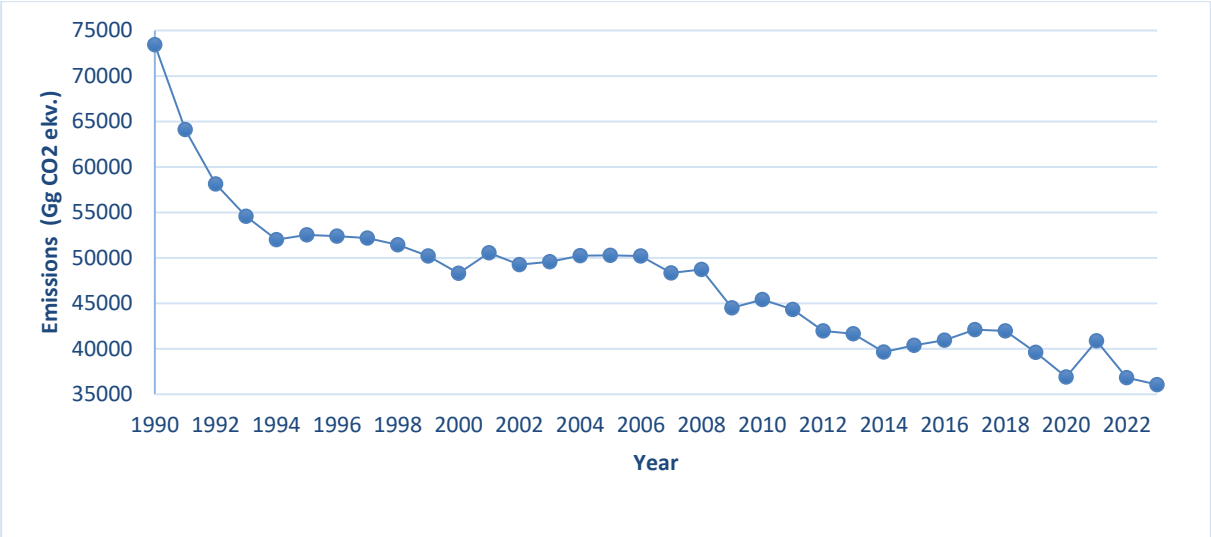

Fig. 1 Development of total greenhouse gas emissions in Slovakia between 1990 and 2023
Source: Total greenhouse gas emissions and air pollutants in Slovakia - https://oeab.shmu.sk/en/emissions/total/trends.html#trendy

To better understand the structure and dynamics of emissions development, it is appropriate to examine in detail the individual sectors that contribute to the Slovak Republic's overall emissions balance. In the following section, we therefore focus on the development of CO_2 eq. emissions specifically in the energy, transport, industrial processes, agriculture, and waste management sectors. The available data only provides a breakdown of emissions for 2022. More recent data have not yet been published.

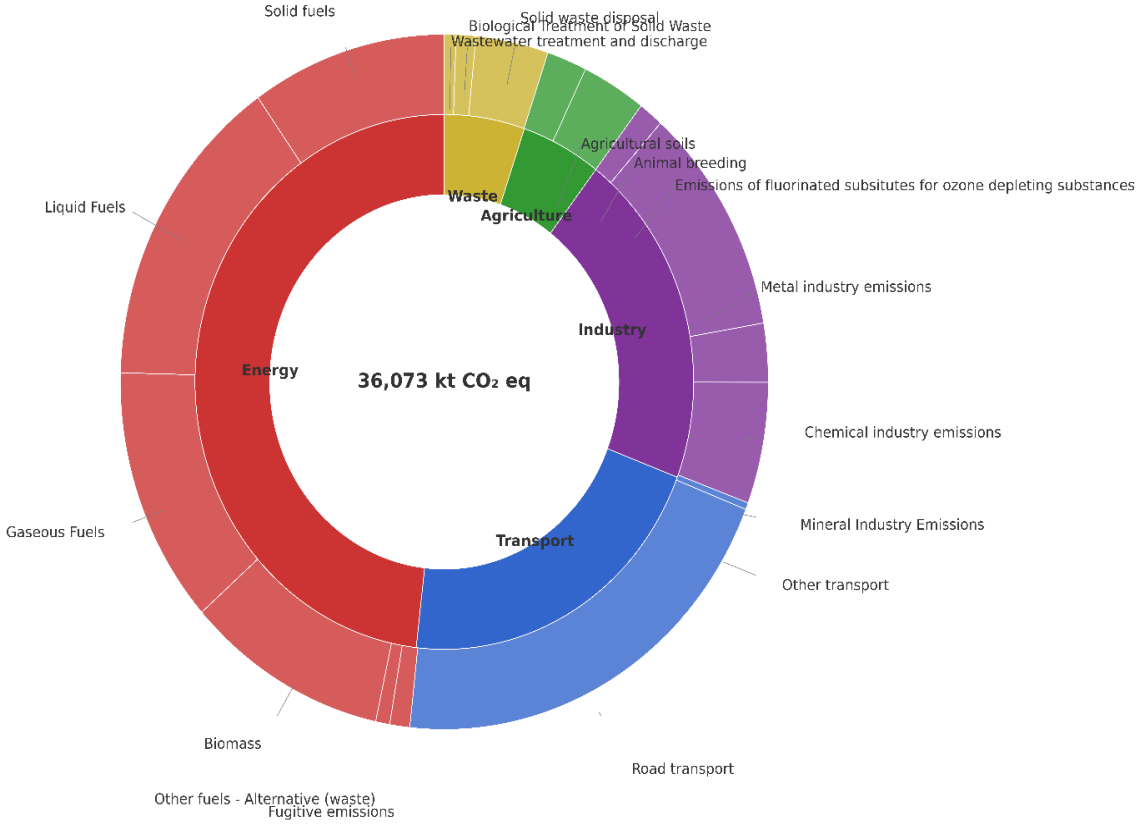

Fig. 2 Development of total greenhouse gas emissions in Slovakia in 2022 by sectors
Source: own processing by the Slovak Hydrometeorological Institute

Based on Fig. 2, the largest share of emissions in Slovakia in 2022 came from the energy sector, accounting for 48.2% of total emissions. This sector includes emissions from various types of fuels, with solid, gaseous, and biomass fuels accounting for the largest share. The second largest sector, with a share of 21%, is transport, where almost all emissions come from road transport (98.5%), while other modes of transport (air, sea,

rail) are included in the subcategory "Other transport," which accounts for only 1.5% of the sector's emissions. The third most significant sector is industry, with a 20.4% share. Within this sector, emissions from the metal industry (52.1% of industrial emissions), the mineral industry (27.6%) and the chemical industry (13.4%) are the most dominant. The agriculture and waste sectors have the same percentage share, i.e. 5.2%. The agriculture sector consists mainly of two subcategories: livestock production (61.7%) and soil emissions (38.3%). Within waste management, the largest share of emissions comes from solid waste landfills (69.5%), followed by biological waste treatment (18.7%) and wastewater treatment (11.2%).

The sectoral analysis also shows that industrial production remains one of the most significant sources of emissions, underscoring the importance of accurate and transparent accounting for emission allowances in this segment. The analysis was carried out with the aim of supporting the main objective of the paper, which is to compare the accounting treatment of emission allowances under Slovak legislation and international IFRS accounting standards. The analysis provided a basis for a better understanding of the practical aspects of emission allowance allocation, their sectoral distribution, and emissions trends over time, thereby enabling accounting approaches to be placed in a real economic and environmental context with an impact on the economic performance of industrial companies. At the same time, it created a basis for the formulation of targeted recommendations for industrial production companies, aimed at streamlining the reporting of emission allowances with an emphasis on companies' economic results.

Results

Companies that have been allocated emission allowances have a legal obligation to account for them. In our results, we compared the accounting for emission allowances from the perspective of Slovak accounting practices and from the perspective of international accounting standards IAS/IFRS.

Accounting for emission allowances according to Slovak accounting practices

Emissions allowances in the Slovak Republic are regulated by Act No. 572/2004 Coll. on Emissions Allowance Trading, which came into effect on November 1, 2004. This regulation is based on European Union law and the Kyoto Protocol. Accounting for emission allowances is also regulated by Measure No. 23054/2002-92 of the Ministry of Finance of the Slovak Republic, as amended by current regulations on accounting procedures for entrepreneurs using the double-entry accounting system. In accordance with these procedures, the framework chart of accounts does not include a separate account for emission allowances; therefore, the accounting procedures recommend creating a new account in the accounting unit's chart of accounts, namely 254 – Emission Allowances. The allocated share of emission allowances is evaluated at market value and credited to account 254 – Emission Allowances, with a corresponding entry debiting account 384 – Deferred Revenues.

According § 30b of the Double-Entry Accounting Procedures, emission allowances are accounted for as follows: "In an accounting unit to which a proportional share of emission allowances is credited free of charge to the allowance account in accordance with a special regulation, are these emission allowances accounted for on the date of their crediting at market value in accordance with § 25 of the Act. Emission allowances are accounted for as a debit to the account created in accounting group 25 – Short-term financial assets, in accordance with the recommendation of the Ministry of Finance of the Slovak Republic, in account 254 – Emission allowances, with a corresponding entry in account 384 – Deferred Revenues." The share of emission allowances credited free of charge is considered a short-term financial asset from an accounting perspective.

Tab. 1 Accounting treatment of allocated emission allowances

Accounting case	Debit	Credit
Issuance of emission allowances	254 – Emission Allowances	384 – Deferred Revenues

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

The accounting entity may trade with the allocated emission allowances. If the number of emission allowances allocated to the accounting entity is insufficient, the entity can purchase additional allowances. Conversely, if the accounting entity has a surplus of emission allowances, it may sell these emission allowances. According to §30b of the Double-Entry Accounting Procedures, the sale and purchase of emission allowances is accounted for as follows: "Purchased emission allowances are accounted for in account 254 – Emission allowances at acquisition cost. The acquisition of emission allowances is accounted for in account 259 – Acquisition of short-term financial assets. The sale of emission allowances is credited to account 254 – Emission allowances with a corresponding debit to account 561 – Securities and shares sold. Revenue from the sale of emission allowances is accounted for in account 661 – Revenue from the sale of securities and shares.

Tab. 2 Accounting treatment of emission allowances purchase

Accounting case	Debit	Credit
Purchase of emission allowances	259 – Acquisition of short-term financial assets	325 – Other liabilities

Classification of emission allowances as assets	254 – Emission Allowances	259 – Acquisition of short-term financial assets
Payment to the seller of emission allowances	325 – Other liabilities	221 – Bank accounts

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

Table 2 shows accounting cases related to the purchase of emission allowances. The purchase of emission allowances intended for trading may also be carried out on the public market. The accounting entity accounts the purchase of emission allowances as a debit to account 259 – Acquisition of short-term financial assets and, correspondingly, as a credit to account 325 – Other liabilities. If the accounting entity has purchased emission allowances, they must subsequently be classified as short-term financial assets. The classification of emission allowances as an asset is accounted for as a debit to account 254 – Emission allowances and a credit to account 259 – Acquisition of short-term financial assets. The accounting entity accounts for the payment to the seller of emission allowances as a debit to account 325 – Other liabilities and a credit to account 221 – Bank accounts.

Tab. 3 Accounting treatment of the sale of emission allowances

Accounting case	Debit	Credit
Sale of emission allowances	315 – Other receivables	661 – Revenues from the Sale of Securities and Shares
Derecognition of emission allowances from assets	548 – Other Operating Expenses	254 – Emission Allowances
Accounting for the share of emission allowances allocated free of charge	384 – Deferred Revenues	648 – Other Revenues from Operating Activities
Payment of funds by the buyer	221 – Bank accounts	315 – Other receivables

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

Table 3 shows accounting cases related to the sale of emission allowances. The sale of emission allowances intended for trading may also take place on the public market. The accounting entity records the sale of emission allowances as a debit to account 315 – Other receivables with a corresponding credit to account 661 – Revenue from the sale of securities and shares. After the sale of emission allowances, the accounting entity is required to remove the sold emission allowances from the accounts, debiting account 548 – Other Operating Expenses and crediting account 254 – Emission allowances. Subsequently, the accounting entity must settle the share of the emission allowances credited free of charge by making an accounting entry debiting account 384 – Deferred revenues and crediting account 648 – Other Revenues from Operating Activities. The payment of funds from the buyer is debited to account 221 – Bank accounts and credited to account 315 – Other receivables.

According to the Act on Emissions Trading, an accounting entity is obliged, as of the date of the financial statements, to recognise a liability to hold sufficient emission allowances to cover the emissions released. As of the financial statement date, if the entity does not yet have the verified amount of emissions released confirmed by an authorised verifier, i.e., it does not know the exact amount of the liability, it is required to create a reserve for emitted greenhouse gases.

This reserve must be created for emissions that are equal to a multiple of the known volume of emissions released from the first day of the calendar year to the date on which the accounting entity prepares its financial statements. The accounting entity is also required to publish the values of emission allowances that the accounting entity determines for surrender in accordance with a special regulation.

If, on the date of preparation of the financial statements, the accounting entity does not have a sufficient amount of emission allowances, it is required by the Act on Trading in Emission Allowances to use the estimated amount necessary to purchase emission allowances. The reserve is therefore created in the amount of the expected acquisition expenses for the missing volume of emission allowances. Such a reserve is recorded by the accounting entity as a debit to account 548 – Other Operating Expenses, with a corresponding credit to account 323 – Short-term reserves.

Tab. 4 Accounting Treatment of the Reserve for the Missing Volume of Emission Allowances

Accounting case	Debit	Credit
Reserve for the purchase of missing emission allowances	548 – Other Operating Expenses	323 – Short-term reserves

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

Based on the quantity of emission allowances designated for surrender, the accounting entity is required to recognise the corresponding portion of deferred revenue. The Act on Emissions Trading assumes that emission allowances are allocated for a period longer than one year, and the accounting entity accounts for the free allocation of emission allowances using account 384 – Deferred revenues. As of the date of preparation of the financial statements, the accounting entity will account for emission allowances as shown in the table below.

Tab. 5 Accounting Treatment of Emission Allowances as of the Balance Sheet Date

Accounting case	Debit	Credit
Emitted volume of emissions	548 – Other Operating Expenses	323 – Short-term reserves
Emitted volume of emissions exceeding the allocated emission allowances to be surrendered	548 – Other Operating Expenses	323 – Short-term reserves
Accounting for the share of emission allowances allocated free of charge	384 – Deferred Revenues	648 – Other Revenues from Operating Activities

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

At the balance sheet date, the accounting entity shall recognise the emitted volume of emissions as a debit to account 548 – Other operating expenses, with a corresponding credit to account 323 – Short-term reserves. In the event that the emitted volume of emissions exceeds the volume of emission allowances to be surrendered, the entity is required to account for this excess in the same way — by debiting account 548 – Other operating expenses and crediting account 323 – Short-term reserves. Subsequently, the entity must recognise the portion of gratuitously allocated emission allowances by debiting account 384 – Deferred revenues and crediting account 648 – Other revenues from operating activities.

After the authorised verifier or the relevant authority has verified the volume of emissions released, the accounting entity knows the actual amount of the liability. If the actual amount of this liability exceeds the estimated amount when the reserve was created, the difference is recognised as a cost in the accounting period in which the actual volume of emissions released is confirmed.

The accounting entity may encounter a situation in which the actual amount of the liability is lower than the estimated amount taken into account when creating the reserve. The accounting entity accounts for this difference as revenue for the relevant accounting period, in which the actual amount of emissions released was confirmed.

The accounting entity shall record the handed-over volume of emission allowances as a debit to account 323 – Short-term reserves and as a credit to account 325 – Other liabilities. If the difference between the liability amount and the reserve is positive, the accounting entity shall record the situation in account 548 – Other operating expenses, with a corresponding entry in account 325 – Other liabilities. Conversely, if the difference between the amount of the liability and the provision is negative, the accounting entity shall record this situation as a debit to account 323 – Short-term reserves, with a corresponding credit to account 648 – Other revenues from operating activities.

Tab. 6 Accounting Treatment of the Confirmed Surrender of Emission Allowances

Accounting case	Debit	Credit
Surrendered volume of emission allowances	323 – Short-term reserves	325 – Other liabilities
Positive difference between the liability and the reserve (+)	548 – Other Operating Expenses	325 – Other liabilities
Negative difference between the liability and the reserve (-)	323 – Short-term reserves	648 – Other revenues from operating activities
Extinguishment of liability	325 – Other liabilities	254 – Emission Allowances

Source: Own elaboration based on § 30 of the Accounting Procedures for Entrepreneurs Using the Double-Entry Accounting System

The extinguishment of the liability is accounted for in the same way as the use of short-term financial assets, i.e. using account 254 – Emission allowances. The accounting entity accounts for the extinguishment of the liability by debiting account 325 – Other liabilities and crediting account 254 – Emission allowances. Emission allowances can be valued at acquisition cost or at market value. Conversely, the disposal of emission allowances is most often valued using the FIFO (first-in, first-out) method or the weighted arithmetic mean.

Accounting treatment of emission allowances under IAS/IFRS

Contrary to Slovak accounting practices, which treat emission allowances as short-term securities, under international financial reporting standards, emission allowances are considered intangible assets (according to International Accounting Standard IAS 38 – Intangible Assets). International Accounting Standard IAS 38 – Intangible Assets is followed by IFRIC 3 (International Financial Reporting Interpretations Committee), which was repealed in July 2005. In view of this, there is currently no uniform, effective regulation in the area of emission allowances under IAS/IFRS. (EY, 2025)

Based on IFRIC 3, paragraph 13, emission allowances are intangible assets, i.e., they can be characterised as non-monetary assets that lack physical substance. The purpose of emission allowances is not to grant the right to emit emissions into the air. On the contrary, emission allowances are only a type of instrument that must be delivered to settle the liability arising from emissions (Iasplus, 2025)

Purchased emission allowances are valued at acquisition cost. Allowances that the company receives from public authorities at no additional cost or at a price lower than their market value are recognised at market value immediately upon receipt. Emission allowances have zero depreciable value, which means that they cannot be

depreciated. This is because the residual price that can be obtained on an active market is at least equal to the carrying amount. (Iasplus, 2025)

According to the emissions trading scheme under IFRIC 3, three main accounting elements arise:

- an asset from the holding of emission allowances,
- a government grant, and
- a liability stemming from the obligation to surrender emission allowances equal to the actual emissions released.

From the moment a participant in the emissions trading scheme under IFRIC 3 gains control over the emissions, the emission allowances are recognised as assets. The allowances are recognised as assets from the moment they are allocated. Emission allowances are measured at their market value on the date of initial recognition. Two models may be used for subsequent measurement:

- *Cost model: Under this model, emission allowances are recognised at their initial acquisition cost, reduced by any accumulated impairment losses.*
- *Revaluation model: This model involves measuring emission allowances at their revalued amount, meaning their market value at the date of revaluation, less any subsequent accumulated impairment losses. Revaluations should be performed at sufficient frequency so that, at the balance sheet date, the carrying amount does not differ significantly from the market value.*

In the event of a revaluation of emission allowances, such events are accounted for as follows:

- If the market value of emission allowances exceeds their accounting value, the first surplus from the revaluation of allowances is recognised in equity – the revaluation reserve. The revaluation reserve may be transferred to retained earnings if a surplus is achieved. The revaluation reserve may also be drawn down through the use of intangible assets. The amount of the surplus realised through the use of assets is calculated as the difference between depreciation calculated on the historical cost of the asset and depreciation calculated on the revalued amount. This difference may be transferred from revaluation to retained earnings in each period. If the entity decides to make regular transfers, upon full depreciation of the revalued intangible asset, the related revaluations will be reduced to zero.
- If the market value of emission allowances is lower than their accounting value, the first decrease in the revaluation of allowances is recognised as a cost.
- Further revaluations are subject to the same procedure. If the subsequent valuation is the opposite, the original revaluation accounting is first reversed, and then the procedure is the same as for the first decrease or surplus from the revaluation of emission allowances.

Even though IFRIC 3 has been revoked, the balancing of emission allowances using IFRIC 3 remains valid. Participants in the emission allowance trading scheme are free to account for assets, government grants and reserves, provided that all the requirements of the relevant IAS/IFRS are met. (Iasplus, 2025)

When accounting for emission allowances from the perspective of IAS/IFRS, IAS 20 – Accounting for Government Grants and Disclosure of Government Assistance is also used. Government grants can only be awarded if the entity complies with all conditions set for the grant and will subsequently receive it. The grant is recognised as revenue over the period necessary to allocate it to the costs intended to be compensated.

Grants awarded as compensation for costs already incurred, or as immediate financial support, without costs related to future periods, should be recognised as revenue in the period in which the receivable arose. Subsidies relating to assets may be presented in one of the following two forms:

- deferred revenues,
- deduction of subsidies from the accounting value of assets.

Subsidies relating to income may be reported separately as other income or deducted from related expenses.

Discussion

In this article, we defined emission allowances and emission allowance trading. We then characterised the accounting for emission allowances, with an emphasis on comparing the accounting treatment under Slovak legislation with that under IFRS, followed by proposals for industrial manufacturing companies in the area under review. The comparison of accounting representations shows that the accounting for emission allowances under

IAS/IFRS differs from the accounting for emission allowances under Slovak accounting practices in the following areas:

- Emission allowances are accounted for as intangible long-term assets under IFRS, unlike Slovak accounting practices, according to which emission allowances are accounted for as short-term financial assets.
- Under IFRS, an entity revalues both allocated and purchased emission allowances at the current price valid on the balance sheet date. Under Slovak accounting practices, an entity only values purchased emission allowances.
- According to IFRS, the company recognises the entire amount of government grants for the year as income in that year (based on the value of allocated emission allowances).
- According to Slovak accounting standards, the company recognises only a proportional part of government grants, i.e., emission allowances allocated free of charge, as income, based on the actual or estimated consumption of those allowances.

For industrial manufacturing companies required to account for emission allowances to maximise profits, we propose the following recommendations, which we have divided by time frame and application suitability.

Suggested recommendations for businesses:

In the first proposal, we recommend that companies sell up to 11% of their allocated EUA allowances at no cost. European Unit Allowances (EUA) are carbon credits or emissions that can only be traded within the EU ETS, i.e., they are only tradable within the European Union. Each EUA represents one tonne of CO_2 that the holder has the right to emit. If a company sells emission allowances acquired free of charge, it can purchase CER emission allowances on the European Climate Exchange. CER credits are issued for projects implemented in countries not included in Annex B of the Kyoto Protocol. These credits are derived from projects and are considered complex. Emission allowances are sold on the European Climate Exchange at prices significantly lower than the real value of free emission allowances. Subsequently, the company can convert the purchased CER emission allowances into free emission allowances in the emission allowance registry and surrender them. This solution is more advantageous in the short term.

In the second proposal, we recommend that companies purchase CER emission allowances up to 11% of their allocated emission allowances. Purchasing emission allowances on the European Climate Exchange is advantageous because they are offered at significantly lower prices than the real value of free allowances. The company can then convert the purchased CER emission allowances into allocated EUA emission allowances in the allowance registry and subsequently surrender them. This solution is more suitable in the long term.

Conclusion

Climate change is one of the biggest global problems today. We can eliminate the impact of environmental problems by reevaluating our overall approach to the environment. Among the tools that help reduce the scope and impact of global problems are emission allowances, based on the Kyoto Protocol and European Union law. The paper focused on emission allowances in terms of comparing the accounting treatment of emission allowances under Slovak legislation with the accounting treatment under IFRS international accounting standards, followed by the development of proposals for industrial production companies affected by emission allowances. At the end of the paper, we proposed alternatives for industrial production companies for trading emission allowances, with the aim of maximising profits, which may be advantageous in the long and short term.

Summary

The European Union Emission Trading Scheme (EU ETS) is the basis of the European Union's climate change strategy. It applies not only to the 27 EU Member States but also to three other Member States of the European Economic Area: Norway, Iceland, and Liechtenstein. This system currently covers more than 10,000 installations in the energy and industrial sectors, which together account for around 40 % of total greenhouse gas emissions in the EU. Operators can receive a portion of their allowances free of charge and, if necessary, must purchase the remainder at auction or on the market. Companies that do not use the allowances they received free of charge can sell them.

The issue of emission allowances is present in accounting for companies that were allocated emission allowances and for companies that trade with them. We examined the legislative framework for emission allowances, the provisions, restrictions, and regulations of the European Union. Since emissions trading is subject to accounting, accounting for emissions allowances also directly affects the profit or loss. We have proposed alternatives for industrial production companies to trade emissions allowances to maximise profits in both the short and long term. The results may be helpful to companies required to account for emission allowances.

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